

## ONE-TOUCH TYPE FOLDABLE TENT

### Technical Field

The present invention relates to a one-touch type foldable tent, and in particular to an improved one-touch type foldable tent in which the whole poles are concurrently folded and unfolded based on an operation of a connection assembly in such a manner that a connection assembly is provided at an upper center of a tent for folding and unfolding the poles, and the upper sides of the poles are hinged at a center connection assembly.

### Background Art

Generally, a tent is formed of a cloth connecting a bottom, a lateral side and an upper side, and poles for supporting the same. The tent has been widely used as equipment for sleeping during a leisure activity such as camping, mountain climbing, finishing, etc. and for preventing rain and wind and direct sunlight.

The tent is classified into various types based on an installed structure, a folding method and a frame structure. Recently, the use of a one-touch type foldable tent increases with its improved conveniences.

The one touch type foldable tent is called an umbrella type tent and is disclosed by the Korean utility model registered No. 20-315843 (automatic tent

using snap through) and the Korean utility model registered No. 20-317335 (one-touch tent with detachable bottom cloth).

In the above conventional one-touch type foldable tent, a plurality of frame poles are connected at a center connection assembly positioned at the center of a roof, and a plurality of assistant poles are provided below the same for supporting the frame poles.

However, the conventional tent is upwardly supported using the frame poles and the assistant poles in an umbrella shape, so that many folding points are needed. Therefore, many errors occur at the folding points, and the structure is too heavy. The poles should be bent in a circular shape with a certain electric force so that the tent is configured in a dome shape and is supported stably. However, in the conventional one-touch type tent, a certain height should be obtained between the connection assembly and the connecting portions of the assistant poles. Therefore, an enough space is not obtained for bending the poles in a circular shape, so that the poles are not bent in a desired circular shape.

Therefore, the tent cloths are not maintained in a tight tensional state. When the tent cloths are loosely fixed, the tent receives high resistance, so that the whole structure of the tent gets unstable.

Even when the conventional one-touch tent has a connection assembly for achieving a one-touch operation, it is difficult to effectively perform the operation of the connection assembly, resulting in many problems for actual use.

In the conventional one-touch tent, the poles are folded and unfolded using the connection assembly installed at the center. Therefore, it is impossible to fabricate a bigger size tent because it is needed to easily operate the center portion. Namely, in the case that the tent is made in a bigger size, it is too high and far for operating the center connection assembly of the upper center at the edge portion of the tent. Therefore, it is impossible to perform a desired operation.

The poles of the conventional one-touch foldable tent have the following problems in the joint parts.

The conventional foldable mechanisms are disclosed by the Korean utility model application No. 1988-0014238 (lower joint folding prevention apparatus of one-touch type dome shaped tent), and the Korean utility model application No. 1991-0004601 (lower joint folding prevention apparatus of one-touch type dome shaped tent).

In the conventional foldable apparatus, in the former case, the upper side joint part and the lower side joint part are connected using a hinge pin. A spring is installed for pushing the hinge pin in a state that a hinge hole is formed in a longitudinal shape. Here, the size of the spring is small, and the force for pushing the pole is insufficient. Therefore, a desired function is not satisfied, and a fabrication is not easy.

In the later case, the upper side joint part and the lower side joint part are connected using a hinge pin. An engaging protrusion is formed in a state

that the hinge hole is formed in a longitudinal shape. A spring is provided between the pole and the lower side joint part, and a support ring is installed to support the spring.

However, in the above structure, it is needed to control the lower side joint part to move in the longitudinal direction and to exceed the range of the engaging protrusion. Therefore, the operation is not easy. The constructions of the parts for supporting the spring are complicated, so that the productivity is decreased, and the fabrication cost is increased.

In the problems of the foldable poles, the joint part bites the tent cloths when the joint part is unfolded. Therefore, the tent cloths may be damaged, and the life span gets decreased.

In a state that the foldable poles are uprightly installed in a state that the poles are folded, the rings of the tent cloths could move down along the lengths of the poles and could be gathered at the lower side. In the above state, the poles are not easily unfolded when unfolding the tent (poles) again.

### **Disclosure of Invention**

Accordingly, it is an object of the present invention to provide a one-touch type foldable tent that overcomes the problems encountered in the conventional art.

It is another object of the present invention to provide a one-touch type foldable tent that is capable of concurrently unfolding all poles based on an

operation of a compression plate in such a manner that a plurality of frame poles are connected at a center connection assembly provided at a center connection assembly, and the upper ends of the frame poles are connected with the center connection assembly.

5 It is further another object of the present invention to provide a one-touch type foldable tent that is capable of achieving a tight connection of a tent cloth in such a manner that the unfolded poles are bent in a certain circular shape.

It is still further another object of the present invention to provide a one-  
10 touch type foldable tent that is capable of allowing the poles to have a properly bent state when the tent is unfolded and installed in such a manner that the assistant poles of an umbrella shape are removed in the present invention.

It is still further another object of the present invention to provide a one-touch type foldable tent in which an assembling and operation are achieved  
15 easier by improving a structure of a pole joint part, and a folding work of a tent is fast performed for thereby achieving a convenient use.

It is still further another object of the present invention to provide a one-touch type foldable tent in which an assembly and productivity are enhanced in such a manner that the whole structures are made simpler, and the fabrication  
20 cost is lower.

To achieve the above objects, there is provided a one-touch type foldable tent, comprising a center connection assembly that includes a shaft

part that is formed of a plurality of compression pulling rope holes at a center portion and a plurality of engaging protrusions formed at a lower side of the same in a radial direction; a compression support part that is formed of an upper plate part expanded from an upper side of the shaft part in a horizontal direction; a vertical through hole that is configured to receive the shaft part of the compression support part therein; a plurality of pulling rope holes that are vertically formed at a surrounding portion of the through hole; a vertical pipe part that is formed of a plurality of pulling rope fixing rings provided at a lower side of the outer surface of the same; a plurality of rotation guide grooves that are expanded from an upper side of the vertical pipe part in a horizontal direction and are formed in a radial direction; a connection support part that is formed of a pole support part having a hinge shaft support protrusion formed at each rotation guide groove; and an elastic compression pulling rope that is inserted into the compression pulling rope hole and is tied using a finishing plate of the lower side of the same; a plurality of frame poles, wherein each frame pole includes a pole member that is formed of upper and lower joint parts and, and a molding part formed of a pulling rope engaging groove formed at an end of the pole member; and a hinge shaft part formed at a portion distanced from the engaging groove by a certain distance, wherein the hinge shaft part of the inner end part is inserted, using a pin P, into the hinge shaft support protrusion formed at a rotation guide groove of the pole support part; and a tent cloth that is installed in such a manner that a ring is engaged to an intermediate portion of

each frame pole.

To achieve the above objects, there is provided a one-touch type foldable tent, comprising a center connection assembly that includes a shaft part that has a compression pulling rope hole at a center of the same and a plurality of engaging protrusions formed at a lower side of the same in a radial direction; a compression support part that is formed of an upper plate part expanded from an upper side of the shaft part in a horizontal direction; a vertical pipe part that has a vertical through hole for receiving the shaft part of the compression support part; a plurality of rotation guide grooves that are expanded from an upper side of the vertical pipe part in a horizontal direction and are formed in a radial direction; a connection support part that is formed of a hinge shaft support protrusion formed at each rotation guide groove; and an elastic compression pulling rope that is inserted into the compression pulling rope hole and is tied using a finishing plate of a lower side of the same; a plurality of poles, wherein each pole includes a pole member that includes upper and lower joint parts and is foldable; a spring insertion part that is inserted into an end of the pole member; and a molding part that has a hinge shaft part at an intermediate portion; a plurality of opening springs wherein an outer end of each spring is inserted into a spring insertion part of the molding part of each pole, and an inner end part closely contacts with a lower surface of the connection support part, and a ring part of the intermediate part is inserted into the hinge shaft support protrusion using a pin P together with the hinge shaft

part; and a tent cloth that is installed in such a manner that rings are engaged to the intermediate portions of the frame poles.

To achieve the above objects, there is provided a one-touch type foldable tent, comprising a support assembly that includes a pole hinge support  
5 formed in such a manner that a pair of the same are provided in all directions; a support plate part that has an engaging hole vertically formed at the center of each pole hinge support; and a pipe part that is extended in a lower direction of the support plate part; a compression plate that is positioned at an upper side of the support plate part and includes a mounting member that is engaged at an  
10 engaging hole of the center using a shaft pin wherein an engaging protrusion of the mounting member is caught by an engaging hole of the support assembly, and a widening elastic member adapted to widen the mounting member; a center connection assembly that includes a lifting and lowering member including a lifting and lowering circular plate that is connected using a center  
15 screw rod connected at a center portion of the compression plate and is elastically supported by a mounting spring in the pipe part of the support assembly; and a mounting releasing member that is guided by an extension part inserted through a through hole of the lifting and lowering circular plate and is upwardly and downwardly movable; a plurality of poles, wherein each pole  
20 includes a pole member that includes upper and lower joint parts and is foldable; and a molding part that inserted into an end portion of the pole member and includes a spring insertion part; and a hinge shaft part formed at



an intermediate portion; an opening spring of which one outer end is inserted into a spring insertion part provided at the molding part of the poles, and one inner end is closely contacted with a lower surfaced of the connection support part, wherein a ring part of an intermediate portion is inserted into a hinge support using a pin P together with the hinge shaft part; and a tent cloth that is installed in such a manner that a ring is engaged at an intermediate of each frame pole.

### **Brief Description of Drawings**

The preferred embodiments of the present invention will be described with reference to the accompanying drawings.

Figure 1 is a perspective view illustrating an unfolded state of a one-touch type foldable tent according to the present invention;

Figure 2 is a view illustrating a structure of a folding state of a one-touch type foldable tent according to the present invention;

Figure 3 is a disassembled perspective view illustrating a connection assembly according to a first embodiment of the present invention;

Figure 4 is a cross sectional view illustrating an exploded state of a connection assembly according to a first embodiment of the present invention;

Figure 5 is a cross sectional view illustrating an exploding completed state of a connection assembly according to a first embodiment of the present invention;

Figure 6 is a partial top cross sectional view illustrating a connection assembly according to the present invention;

Figure 7 is a cross sectional view illustrating an upper side joint part according to the present invention;

5        Figure 8 is a cross sectional view illustrating a lower side joint part according to the present invention;

Figure 9 is a lateral cross sectional view illustrating a lower side of a pole according to the present invention;

10       Figure 10 is a front cross sectional view illustrating a lower side of a pole according to the present invention;

Figure 11 is a perspective view illustrating the construction of a protection part of a joint part according to the present invention;

Figure 12 is a cross sectional view illustrating an operation state of a protection part of a joint part according to the present invention;

15       Figure 13 is a partial view illustrating an engaging structure of a tent cloth using a protection part of a joint part according to the present invention;

Figure 14 is a disassembled perspective view illustrating a connection assembly according to a second embodiment of the present invention;

20       Figure 15 is a cross sectional view illustrating an exploded state of a pole of a connection assembly according to a second embodiment of the present invention;

Figure 16 is a cross sectional view illustrating a folding state of a pole of

a connection assembly according to a second embodiment of the present invention;

Figure 17 is a view illustrating an assembling state of an opening spring of a pole according to a second embodiment of the present invention;

5        Figure 18 is a cross sectional view illustrating another construction of according to a second embodiment of the present invention;

Figure 19 is a disassembled perspective view illustrating a connection assembly according to a third embodiment of the present invention;

10       Figure 20 is a cross sectional view illustrating an exploded state of a pole of a connection assembly according to a third embodiment of the present invention;

Figure 21 is a cross sectional view illustrating a folding state of a pole of a connection assembly according to a third embodiment of the present invention;

15       Figure 22 is a perspective view illustrating another construction according to a third embodiment of the present invention;

Figure 23 is an exploded cross sectional view illustrating another construction according to a third embodiment of the present invention; and

20       Figure 24 is a cross sectional view illustrating a folding state of another construction according to a third embodiment of the present invention.

### **Best Mode for Carrying Out the Invention**

The preferred embodiments of the present invention will be described with reference to the accompanying drawings. The present invention is implemented with three embodiments based on the construction of the center connection assembly. Figure 1 is a perspective view illustrating an unfolded state of a one-touch type foldable tent according to the present invention, and  
5 Figure 2 is a view illustrating a structure of a folding state of a one-touch type foldable tent according to the present invention.

[First embodiment]

10 Figure 3 is a disassembled perspective view illustrating a connection assembly according to a first embodiment of the present invention, Figure 4 is a cross sectional view illustrating an exploded state of a connection assembly according to a first embodiment of the present invention, and Figure 5 is a cross sectional view illustrating an exploding completed state of a connection  
15 assembly according to a first embodiment of the present invention.

As shown in Figure 1, a one-touch foldable tent includes a plurality of frame poles 200 that are arranged in a radial shape for supporting the whole structure of a tent, and a center connection assembly 100A for connecting the poles, so that the poles concurrently get folded.

20 At this time, as shown in Figure 3, the connection assembly 100A includes a connection support part 120 for arranging the poles in a radial direction for thereby allowing the poles to be movable with respect to a hinge

shaft, and a compression support part 110 adapted to press the upper ends of the poles supported by the connection support part for thereby unfolding the poles.

Namely, the compression support part 110 includes a shaft part 111 that  
5 has a compression pulling rope hole 112 at the center, and a plurality of engaging protrusions 113 formed in a radial shape at a lower portion, and an upper plate part 115 that is extended from the upper side of the shaft part in a horizontal direction.

The connection support part 120 includes a vertical pipe part 121 that  
10 has a vertical through hole 122 for receiving the shaft part 111 of the compression support part 110 therein, a plurality of pulling rope holes 124 that are vertically formed at a surrounding side of the through hole in the vertical pipe part, a plurality of rotation position determination protrusions 126 that are formed at a lower side of the vertical pipe part 121, a plurality of rotation guide  
15 grooves 129 that are formed in a radial direction in a state they are extended in a horizontal direction at an upper side of the vertical pipe part 121, and a pole support part 128 that has a hinge shaft support protrusion 125 formed at each rotation guide groove.

In addition, the compression support part 110 and the connection  
20 support part 120 are tied using an elastic compression pulling rope 140 wherein the rope 140 is inserted through the compression pulling rope hole 112 and is tied using a finishing plate 114 of the lower side for thereby preventing an

escape.

As shown in Figure 2, the frame poles 200 each include pole members 220 having joint parts 230 and 240, and a molding part 210 formed at an end of the upper most pole member.

5 Here, the molding part 210 includes a pulling rope engaging groove 211 formed at an end of the pole member, and a hinge shaft part 212 formed at a portion moved from the engaging groove by a certain distance. The above whole construction may be formed in a synthetic resin or aluminum material.

The assembling structure of the center connection assembly 100A and  
10 the frame poles 200 according to the present invention will be described with reference to the accompanying drawings.

As shown in Figures 4 and 5, the frame pole 200 is assembled to each rotation guide groove 129 formed in a radial direction on the pole support part 128 of the connection support part 120. The hinge shaft part 212 formed at the  
15 molding part 210 of the pole is assembled to the hinge shaft protrusion 125 by inserting a pin P.

In the thusly assembled frame poles 200, the both ends of the same are inserted through the pulling rope holes 124 of the vertical pipe part 121 by hanging the pole pulling rope 130 onto the pulling rope engaging groove 211  
20 and are fixed to the pulling rope fixing ring 127 at a lower side of the vertical pipe part 121.

Here, the pulling rope 130 is preferably formed of a good quality rubber

rope having a high elastic force and is adapted in such a manner that a front end of the frame pole 200 is pulled down at usual time, so that the poles are arranged in a slanted structure.

Thereafter, the shaft part 111 of the compression support part 110 is  
5 inserted into the vertical through hole 122 formed at the center of the vertical pipe part 121 of the connection support part 120.

At this time, the engaging protrusion 113 is formed in all directions at a lower side of the shaft part 111. The engaging protrusion 113 is guided along the vertical groove 123 of the vertical through hole 122 for thereby being inserted.  
10 In a fully inserted state, the compression pulling rope 140 is inserted into the compression pulling rope hole 112 for thereby achieving an engaging operation in a state that a finishing plate 114 is engaged at a lower side of the shaft part 111.

Here, the compression pulling rope 140 is preferably formed of a good  
15 quality durable rubber rope having a certain elastic force and applies a certain force so that the compression support part 110 is not escaped from the connection support part 120 at usual time and further presses the pole that is first tightened by a pulling rope for thereby achieving a good unfolding of the poles.

20 When the center connection assembly 100A and the frame pole 200 are assembled in the above manner, the rings 310 of the tens cloth 300 are hanged at the intermediate portions of the frame poles 200 for thereby finishing the tent.

As shown in Figure 7, the upper side joint part 240 has a structure formed of a joint support part 241 and a joint rotation part 242, so that the upper side joint part 240 get folded using a hinge pin P. Here, an unfolding force is always applied using the joint spring 243.

5 Therefore, the folding operation is achieved using a certain force externally applied thereto, and the unfolding operation is achieved using the elastic force of the joint spring 243.

As shown in Figure 8, the lower side joint part 230 has a structure formed of a pole support part 231 and a pole rotation part 232.

10 Namely, the lower side joint part 231 includes a pole rotation part 232 that is inserted into a lower side of the pole member 220 and has a longitudinal hole 232b extended from one outer side and a hinge protrusion 232a, a pole support part 231 that is inserted into an upper side of another pole member 220 and has a semicircular cylinder part 231a surrounding a part of the pole rotation  
15 part 232, a hinge part P that horizontally passes through the semicircular cylinder part 231a and is inserted into the longitudinal hole 232b, and a plate spring 233 of which one end 233a is fixedly inserted into the pole support part 231 and the other end 233b is configured to push the pole rotation part 231 in the semicircular cylinder part 231a.

20 The pole rotation part 232 is pulled in the longitudinal direction in cooperation with the plate spring 233 as shown in Figure 8 in order to fold the lower side joint part 230, and the hinge pin P is positioned at the front side of



the longitudinal hole 232b, and it is rotated along the imaginary line in the drawings.

On the contrary, when unfolding the poles 200, the pole rotation part 232 is downwardly moved by the weight itself, and the hinge pin P is positioned  
5 at a lower side of the longitudinal hole 232b for thereby preventing the rotation.

As shown in Figures 9 and 10, an insertion member 234 having a rectangular engaging protrusion 234a is provided at a lower end of the pole 200 of the present invention. The support member 325 is connected using a support and 236 at a corner bottom portion of the tent cloth 300.

10 The support member 235 has a nail hole 235a formed at the outer most portion for receiving a nail 237, a rectangular engaging hole 235b for receiving an insertion member 234, and a band hole 235c for inserting and connecting the support band 236.

At this time, inwardly bent engaging pieces 235d are formed at a lower  
15 side of the rectangular engaging hole 235d for thereby preventing an easier escape, so that it is possible to achieve a desired direction based on its rectangular construction.

As shown in Figures 11 through 13, the poles 200 according to the present invention may be implemented in such a manner that the joint  
20 protection members 250 are adapted at the upper and lower side joint parts 240 and 230.

For example, in the case of the lower side joint part 230, the joint part

may be configured using the pole support part 231 formed at the end of the pole, the pole rotation part 232 formed at an end of the other side pole, and the hinge pin P connecting the same. A protection member 250 is configured with a certain width, surrounding the upper side joint part 230 of the pole. A connection  
5 hole 251 is formed at the both ends of the width wise portion. The hinge pin P is inserted into the connection hole 251 for thereby fixing the same based on a rivet method.

At this time, the protection member 250 is formed of a flexible resin material or a woven material or a member combined with the above materials.  
10 As shown in Figure 11, one end of the same is extended, and a band part 252 having a Velcro tape (or rope) is fixed at the extended portion. The band part 252 is wound onto the pole member 220 for thereby achieving a stable fixing.

Figure 12 is a view illustrating the state of use of the protection member 250.

15 In the case that the protection member 250 is used, as shown in Figure 13, the protection member 250 has a binding rope 253 of which an intermediate portion is fixed at one side of the surface. A support rope 320 is provided at the tent cloth 300, in which the protection member is provided, for thereby binding each other.

20 Even when the joint part 230 of the pole is folded and erected by binding the engaging rope 253 and the support rope 320, since the engaging rope 253 and the support rope 320 support the tent cloth, it is possible to

prevent the tent cloth 300 from be slanted in a downward direction. Therefore, since the tent cloth 300 is not slanted in the downward direction, it is possible to prevent any interference when unfolding the tent.

The operation of the first embodiment of the present invention will be  
5 described with reference to the accompanying drawings.

First, the unfolded state of the tent will be described. When the frame poles 200 connected with the center connection assembly 100A are unfolded based on a compression operation of the compression support part 110, the poles get bent like a bow. As shown in Figure 1, the poles are unfolded as if the  
10 tent cloth 300 is tightly fastened. On the contrary, when the poles are folded based on a releasing operation of the compression support part 110, the joint parts of the frame poles 200 are concurrently folded, so that the tent is folded.

The operation of the connection assembly 100A will be described with reference to Figures 4 and 5.

15 At usual time, the frame poles 200 remains in a state that the pulling rope engaging groove 211 are slightly lifted in a state that the hinge shaft part 212 of the molding part 210 is assembled to the hinge shaft protrusion 125 of the pole support part 128 using the pin P. In the above state, since the pulling rope 130 holds the pulling rope engaging groove 211, the compression support  
20 part 110 is vertically pressed.

Therefore, in the shaft part 111 of the compression support part 110, the engaging protrusion 113 of the lower side is exposed through the vertical

through hole 122 of the connection support part 120. In this state, the compression support part 110 is rotated in the clockwise direction.

When the shaft part 111 of the compression support part 110 is rotated, the engaging protrusion 113 of the lower side is caught by the rotation position determination protrusion 126 at a lower side of the vertical pipe part 121 and is  
5 stopped. At this time, the upper plate part 115 presses the upper sides of the frame poles 200. The pressed frame poles 200 are lifted most in the direction of the hinge shaft part 212 and are bent like a bow, so that the tent cloth 300 is exploded.

10 When folding the tent, the upper plate part 115 of the compression support part 110 is pressed and rotated in the counterclockwise direction.

When the shaft part 111 of the compression support part 110 is rotated in the reverse direction, the engaging protrusions 113 of the lower sides are arranged with the vertical grooves 123 of the vertical through hole 122. The  
15 compression support part 110 is easily moved up by a force that the front ends of the frame poles 200 are intended to be lifted. Therefore, since the tensioning force between the frame poles 200 is released. When the joint parts 230 and 240 are folded, the tent cloth 300 is easily folded.

In the one-touch foldable tent according to a first embodiment of the  
20 present invention, the center connection assembly is formed of a support part and a compression support part. In a state that the hinge shaft parts of the frame poles are inserted into the hinge shaft support protrusion of the

connection support part, all the frame poles arranged in a radial shape are concurrently folded and unfolded based on a simple operation that the compression support part is pressed and rotated. Therefore, it is possible to easily fold and unfold the tent based on a one-touch method.

5

[Second embodiment]

Figure 14 is a disassembled perspective view illustrating a connection assembly according to a second embodiment of the present invention, Figure 15 is a cross sectional view illustrating an exploded state of a pole of a connection assembly according to a second embodiment of the present invention, and Figure 16 is a cross sectional view illustrating a folding state of a pole of a connection assembly according to a second embodiment of the present invention.

As shown in Figure 14, the center connection assembly 100B according to the second embodiment of the present invention includes a connection support part 120 configured to allow the poles to be arranged in a radial direction and to support the poles rotatable with respect to a hinge shaft part of the end of the same, and a compression support part 110 configured to press the upper ends of the poles supported by the connection support part and to unfold the same.

Namely, the compression support part 110 includes a shaft part 111 that has a compression pulling rope hole 112 at a center portion and a plurality of

engaging protrusions 113 arranged at a lower side of the same in a radial direction, and an upper plate part 115 that is expanded from an upper side of the shaft part in a horizontal direction.

In addition, the connection support part 120 includes a vertical pipe part  
5 121 having a vertical through hole 122 for receiving a shaft part 111 of the compression support part 110 therein, a plurality of rotation position determination protrusions 126 formed on a bottom of the vertical pipe part 121, a plurality of rotation guide grooves 129 that are expanded from an upper side of the vertical pipe part 121 in a horizontal direction from and are formed in a  
10 radial direction, and a hinge shaft support protrusion 125 that is formed at each rotation guide groove.

The compression support part 110 and the connection support part 120 are tied using an elastic compression pulling rope 140 that is inserted into the compression pulling rope hole 112 for thereby binding the same in cooperation  
15 with a finishing plate 114 of a lower side and preventing an escape from each other.

The constructions of the frame poles 200, the upper side joint part and the lower side joint part of the poles are the same as the first embodiment of the present invention.

20 However, the upper side for connecting an opening spring 214 is different as shown in Figure 17.

Namely, the frame poles 200 are rotatably connected by forming a

molding part 210 at an upper side of the pole member 220.

The molding part 210 is formed at an end of the pole member and includes a spring insertion part 213, a hinge shaft part 212 formed at an intermediate portion, and an opening spring 214 of which an end is inserted into the spring insertion part 213 of the molding part 210 wherein it has a ring part 214a at an intermediate portion. When the ring part 214a of the opening spring 214 is inserted into the hinge shaft support protrusion 125 together with the hinge shaft part 212 using a pin P, the opening spring 214 allows the poles 200 to be lifted up.

The assembling structure of the center connection assembly 100B and the frame poles 200 according to the second embodiment of the present invention will be described.

The frame pole 200 is assembled to each rotation guide groove 129 formed on the connection support part 120 in a radial direction, and the ring part 214a of the opening spring 214 is inserted into the hinge shaft part 212 formed at the molding part 210 of the pole. The inserted portion is inserted into the hinge shaft support protrusion 125 using a pin P based on a rotatable method.

Thereafter, the shaft part 111 of the compression support part 110 is inserted into the vertical through hole 122 formed at the center of the vertical pipe part 121 of the connection support part 120.

The engaging protrusions 113 are protruded from a lower side of the shaft part 111 in all directions. The engaging protrusions 113 are guided along

the vertical groove 123 of the vertical through hole 122 and are inserted. When the engaging protrusions 113 are fully inserted, the compression pulling rope 140 is inserted into the vertical compression pulling rope hole 112 and is tied by disposing the finishing plate 114 at a lower side of the shaft part 111.

5           The compression pulling rope 140 is formed of a good quality durable rubber rope and provides a certain elastic force at usual time so that the compression support part 110 is not escaped from the connection support part 120. The compression pulling rope 140 further presses the poles first pulled by the pulling rope for thereby achieving a good unfolding.

10           When the center connection assembly 100B and the frame poles 200 are assembled in the above method, the rings 310 of the tent cloth 300 are hanged to the intermediate portions of the frame poles 200 for thereby finishing a tent.

As shown in Figure 18, the elastic compression pulling rope 140  
15           according to the second embodiment of the present invention could be substituted with a tensional coil spring 140a. At this time, a through hole is formed instead of the compression pulling rope hole 112 of the upper plate part 115. An engaging ring 114a is formed at the finishing plate 114 for engaging both ends of the coil spring 140a inserted into the through hole. An engaging  
20           washer 114b is formed at an upper side.

The tent according to the second embodiment of the present invention is folded and unfolded in the same manner as the first embodiment of the



present invention.

When the frame poles 200 connected with the center connection assembly 100B are unfolded based on a compression operation of the compression support part 110 like the first embodiment of the present invention, the poles are bent like a bow, so that the tent cloth 300 gets tensioned. On the contrary, when the poles are folded based on the releasing operation of the compression support part 110, the joint parts of the frame poles 200 are concurrently folded, and the tent is folded.

The operation of the center connection assembly 100B will be described with reference to Figure 16.

Figure 16 is a cross sectional view illustrating the folding operation according to a second embodiment of the present invention.

The frame poles 200 vertically compresses the compression support part 110 at usual time in a state that the hinge shaft part 212 of the molding part 210 is assembled using the pin P together with the opening spring 214 at the hinge shaft support protrusion 125.

The shaft part 111 of the pressed compression support part 110 allows the compression support part 110 to rotate in the clockwise direction in a state that the engaging protrusion 113 of the lower side is exposed to the outside through the vertical through hole 122 of the connection support part 120.

When the shaft part 111 of the compression support part 110 is rotated, the engaging protrusion 113 of the lower side is caught by the rotation position

determination protrusion 126 of the lower side of the vertical pipe part 121 and is not rotated. In the above state, the upper plate part 115 most presses the upper sides of the frame poles 200, and the pressed frame poles 200 are lifted up most with respect to the hinge shaft part 212 in cooperation with the opening  
5 spring 214, so that the poles are bent in a shape of a bow for thereby unfolding the tent cloth 300.

In this case, when folding the tent, the upper plate part 115 of the compression support part 110 is pressed and rotated in the counterclockwise direction.

10 When the shaft part 111 of the compression support part 110 is rotated in the counterclockwise direction, the engaging protrusions 113 formed at the lower ends are matched with the vertical grooves 123 of the vertical through holes 122. In this state, the elastic compression pulling rope 140 gets loosened, and a force for lifting up the front ends of the frame poles 200 is generated.  
15 Therefore, the whole construction of the compression support port 110 is lifted. Since the tensioning force of the frame poles 200 is released, when the joint parts 230 and 240 are folded, it is possible to easily fold the tent cloth 300.

In the one-touch type foldable tent according to a second embodiment of the present invention, the central connection assembly is formed of a  
20 connection support part and a compression support part. The hinge shaft part of the frame poles is inserted into the hinge shaft support protrusion of the connection support part. In this state, the compression support part is pressed

and rotated, so that all the frame poles arranged in a radial direction are concurrently folded and unfolded based on a simple operation. Therefore, it is possible to easily fold the tent based on a one-touch method.

5 [Third embodiment]

The third embodiment of the present invention will be described.

Figure 19 is a disassembled perspective view illustrating a connection assembly according to a third embodiment of the present invention, Figure 20 is a cross sectional view illustrating an exploded state of a pole of a connection  
10 assembly according to a third embodiment of the present invention, and Figure 21 is a cross sectional view illustrating a folding state of a pole of a connection assembly according to a third embodiment of the present invention.

The third embodiment of the present invention includes a plurality of frame poles 200 for supporting the whole construction of the tent like the first  
15 and second embodiments of the present invention, wherein the poles are connected using the center connection assembly 100C for thereby concurrently folding and unfolding the poles.

At this time, as shown in Figure 20, the center connection assembly 100C of the third embodiment of the present invention includes a connection  
20 support part 160 capable of supporting the poles arranged in a radial shape wherein the poles are rotatable with respect to the hinge shaft part of the ends, a compression plate 150 capable of pressing and the upper ends of the poles

supported by the connection support part and unfolding the same, a lifting and lowering member 170 for achieving an operation of the compression plate.

The support part 160 of the center connection assembly 100C includes a pole hinge support 165 in all directions for thereby connecting the poles 200, a support plate part 161 having an engaging hole 161a at a center, and a pipe  
5 part 162 that is extended from a lower side of the support plate part.

The compression plate 150 includes a mounting member 152 that is located on an upper side of the support plate part 161 and is inserted at the engaging hole 151 of the center using a shaft pin 153 wherein the engaging  
10 protrusion 152a is caught by the engaging hole 161a of the support part, and a widening elastic part 154 adapted to widen the mounting member.

In addition, the lifting and lowering member 170 includes a lifting and lowering circular plate 174 that is connected using a center screw rod 171 connected at the center of the compression plate and is elastically supported by  
15 a mounting spring 172 supported in the pipe assembly 162 of the support part, and a mounting releasing member 173 that is guided by an extension 173a inserted through the through hole 174a of the lifting and lowering circular plate and is movable up and down.

The mounting releasing member 173 is formed of an upper part 173a  
20 and a lower part 173b for thereby forming one structure. Namely, the mounting releasing member 173 is assembled in such a manner that the extension 173c is inserted into the through hole 174a of the lifting and lowering circular plate

174. The mounting releasing member 173 is configured to push the engaging protrusion 152a of the mounting member 152 irrespective of the lifting and lowering operation of the lifting and lowering circular plate 174 supported by the mounting spring 172.

5           Here, a stopper nut 171a is provided at the center screw rod 171 for limiting the rising height of the mounting member 152. The lifting and lowering member 170 includes an assistant connection line member 175 provided for easily connecting the center of the tent cloth at the lower surface.

10           The assistant connection line member 175 is configured in such a manner that the lifting and lowering member 170 can be easily pulled down in the pipe part 162 of the support part 160 in a horizontal state.

          The constructions of the frame poles 200, the upper joint parts 230 and the lower joint parts 240 are the same as the first embodiment of the present invention.

15           In addition, the upper side for connecting the opening spring 214 is the same as the second embodiment of the present invention as shown in Figure 17.

          Namely, the frame poles 200 are rotatably connected by providing the molding part 210 at the upper side of the pole member 220.

20           The molding part 210 is formed at the end of the pole member and includes a spring inserting part 213, a hinge shaft part 212 of the intermediate part, and an opening spring 214 of which an end is inserted into the spring inserting part 213, wherein the opening spring 214 has a ring part 214a at an

intermediate portion. The molding part 120 is adapted in such a manner that the opening spring 214 lifts up the poles 200 when the ring part 214a of the opening spring 214 is inserted into the hinge shaft support protrusion 125 together with the hinge shaft part 212.

5           The operation of the center connection assembly 100C and the frame pole 200 according to the present invention will be described with reference to the accompanying drawings.

          Figure 20 is a view illustrating a state that the poles are widened as the center connection assembly 100C according to the present invention presses  
10   the upper sides of the frame poles 200, and the tent is unfolded.

          At this time, when the tent is folded, the mounting releasing member 173 of the lifting and lowering member 170 is hit upwardly from the inside of the tent (or outside of the same).

          In the above state, the lifting and lowering member 170 fixed with the  
15   mounting releasing member 175 is moved up irrespective of the mounting spring 172, and the upper side 170a pushes the engaging protrusion 152a of the mounting member 152.

          Therefore, when the engaging protrusion 152a of the mounting member 152 is inwardly pushed, the front end lifts up the hinge support 1654 based on  
20   the self-weight of the poles 200. Therefore, as shown in Figure 20, the poles 200 are folded in the direction parallel with the center screw rod 171 for thereby folding the tent cloth.

On the contrary, when folding the tent, the assistant connection line member 175 of the lifting and lowering member 170 is pulled from the inner side of the tent (or from the outside of the same).

When the assistant connection line member 175 is pulled, the mounting  
5 releasing member 173 of the lifting and lowering member 170 is moved down, dragging the compression plate 150 connected with the center screw rod 171. In the mounting member 152 installed at the compression plate 150, since the engaging protrusion 152a formed at the intermediate portion is widened by the widening elastic member 154 capable of generating an outwardly applying force,  
10 the engaging protrusions 152a are caught by the inner side of the engaging hole 161a of the support part 160.

Therefore, as shown in Figure 20, the poles 200 lift the hinge support 165 up to the hinge point, so that the tent cloth hanged over the poles 200 is widely unfolded.

15 As shown in Figures 22 through 24, the parts of the compression plate 150 and the lifting and lowering member 170 according to the third embodiment of the present invention will be improved.

The compression plate 150 of Figure 22 is configured to prevent the left and right movements when it is inserted into the center of the support assembly  
20 160 by forming the support rod part 155 extended from the lower center portion. A vertical groove 155a for the vertical direction mounting member 152 is provided at the surrounding portion of the support rod part 155 for thereby

preventing a movement of the mounting member 152.

The lifting and lowering member 170 of Figure 22 may include a new widening elastic member 154 that operates at the upper center portion of the lifting and lowering circular plate 174, omitting the lower cylinder part of the mounting releasing member 173 that is difficult to assemble. The lower side of the mounting releasing member 173 is configured to be pressed by the pressing member 177 provided at the center of the ceiling of the tent cloth 300.

In Figures 22 through 24, reference numeral 156 represents an outer cover, and 176 represents a washer for fixing the widening elastic member 154 and binding the assistant connection line material 175.

Since the one-touch foldable tent according to the third embodiment of the present invention is configured to be foldable by operating the inner or outer side of the tent or the center upper side of the tent, even when the tent has a big size, it is easy to operate the tent. A small size user can also easily handle the tent according to the present invention. Namely, even when the tent has a big size or a user is small, it is possible to easily fold or unfold the poles from the center connection assembly based on a simple operation that the poles are pulled down from the inner center of the tent or the ceiling is hit up.

#### **Industrial Applicability**

As described above, in the one-touch foldable tent according to the present invention, the center connection assembly provided for connecting the



poles is formed of a circular connection support part and a compression support part. In the present invention, it is possible to easily unfold and fold all the frame poles arranged in a radial direction in a state that the hinge shaft parts of the frame poles are inserted into the hinge shaft support protrusions of the connection support part. Therefore, it is possible to easily fold and unfold the tent based on a one-touch method.

In particular, since the present invention does not need an assistant pole for supporting the frame poles as compared to the conventional art. The fabrication is easy, and the fabrication cost is low.

In the present invention, since the lower sides below the hinge shaft part are bent and widened like a bow by pressing the upper sides of the frame poles, the tent cloth is unfolded with a full tension for thereby achieving a good outer look. The wind effects are minimized, so that it is possible to achieve a stable unfolded state.

Since the tent cloth is not bitten by the joint parts, it is possible to prevent any damage of the tent cloth. In a state that the poles are folded, since the tent cloths don't go down even when the tent is vertically erected, it is possible to achieve a stable and smooth exploding operation.

As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described examples are not limited by any of the details of the foregoing description, unless otherwise specified, but rather

should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalences of such meets and bounds are therefore intended to be embraced by the appended claims.

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